

ASSOCIATION OF

# FEDERAL COMMUNICATIONS CONSULTING ENGINEERS

WASHINGTON, D.C.

June 25, 1996

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Mr. William Caton  
Acting Secretary  
Federal Communications Commission  
1919 M Street, N.W.  
Washington, D.C. 20554

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Federal Communications Commission  
Office of Secretary

RE: MM Docket No. 96-62

Dear Mr. Caton:

Transmitted herewith is the original and five copies of the comments of the AFCCE in the above referenced matter.

If any questions arise in this matter, please contact the undersigned.

Sincerely,

Carl T. Jones, Jr., AFCCE President  
c/o: Carl T. Jones Corporation  
7901 Yarnwood Court  
Springfield, VA 22153

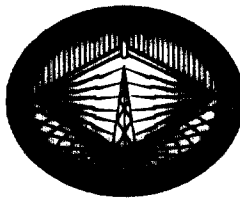
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Federal Communications Commission  
Office of Secretary



ASSOCIATION OF

**FEDERAL COMMUNICATIONS CONSULTING ENGINEERS**  
WASHINGTON, D.C.

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

n the Matter of	)	
Amendment of Parts 73 of the	)	
Commission's Rules to More	)	
Effectively Resolve Broadcast	)	MM Docket No. 96-62
Blanketing Interference,	)	
Including Interference to	)	
Consumer Electronics and Other	)	
Communications Devices	)	

**NOTICE OF PROPOSED RULE MAKING**

**Comments of the Association of  
Federal Communications Consulting Engineers**

These comments on the Notice of Proposed Rule Making (NPRM) in the above captioned proceeding are submitted on behalf of the Association of Federal Communications Consulting Engineers (AFCCCE). The AFCCCE is a professional organization whose members are professional engineers practicing as consultants to broadcasters and other segments of the communications industry, communications company engineering executives, representatives of equipment manufacturers and others working in the communications arena. The AFCCCE has a long history of participation in FCC rule making proceedings dating back to its founding nearly 50 years ago. The AFCCCE welcomes the opportunity to submit its comments to the FCC in this proceeding.

The FCC proposes to consolidate Sections 73.88, 73.318 and 73.685(d) of the AM, FM and TV rules into a new blanketing interference rule in Section 73.1630. The rule making proposes to amend the signal contour determination for AM radio and TV blanketing areas. Specific calculations are proposed to define the region within which a broadcast station will be responsible for resolving blanketing interference complaints. The rule making provides a more detailed clarification of the licensee's responsibility in resolving blanketing interference problems, and includes a list of protected and non-protected electronic devices

The NPRM defines the blanketing area as the area in the immediate vicinity of a broadcast station, where the signal of the station is so strong that it interferes with the reception of other stations irrespective of the stations' frequencies. It includes the area where a strong broadcast signal desensitizes radiofrequency receivers and adversely affects other electronic equipment operating on a wide band of frequencies.

In Europe, an electronic device must meet a 1 V/m (120 dBu) or 3 V/m (130 dBu) immunity standard depending on the type of device. Unfortunately, the United States does not prescribe an immunity standard for electronic devices. Therefore, the electronic devices used here can vary in blanketing interference susceptibility from slight to severe. An example of an immunity problem, which is sometimes considered an AM blanketing problem, is when a receiver is attempting to receive one station in the vicinity of another station operating on a frequency one half the first (i.e., 1260 kHz and 630 kHz). Instead of also incorporating electronic device immunity standards, the FCC is attempting to solely regulate the broadcast stations to accommodate the wide variety of electronic devices. The FCC appears to be shifting the problem of poorly performing consumer equipment to the broadcaster.

The FCC long ago established the frequency bands, power levels, and emission standards for the AM, FM and TV broadcast stations it regulates. In order for consumer electronic devices and broadcast stations to reasonably co-exist in this environment and provide a more efficient use of the spectrum, the AFCCE believes the FCC must also consider setting immunity standards for the electronic devices. It is only appropriate for there to be immunity standards on consumer electronic devices to accommodate people that move into potential blanketing areas. The burden should not fall solely on the established broadcaster to accommodate environmental changes beyond its control.<sup>1</sup>

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<sup>1</sup> Ironically, the increased sensitivity of some modern receivers is coupled with a reduced ability to handle a wide range of input signal levels and thus are more susceptible to "blanketing" interference than older designs.

The FCC proposes to maintain the current 1 V/m field strength level for AM blanketing. The AFCCE believes this value is too conservative and should be increased. In a number of cases, the FCC has waived the requirement of Section 73.24(g) of the rules (provision that the population within the 1 V/m contour is less than 1% of the population within the 25 mV/m contour).

In 4 particular cases, tests in the field showed no blanketing interference problems at signal levels of 4 V/m. The cases are :

1. Grenada Broadcasting Company, Inc. 1 FCC 2d 1009  
 Grenada, Mississippi  
 Present: 1400 kHz, 0.25 kW, U  
 Proposed: 1400 kHz, 0.25 kW, 1 kW-LS, U

Survey in field intensities from 1 to 4 V/m showed no blanketing interference problems.

2. WHOO Radio, Inc. 4 FCC 2d 437  
 Orlando, Florida  
 Present: 990 kHz, 5 kW, 10 kW-LS, U, DA-N  
 Proposed: 990 kHz, 5 kW, 50 kW-LS, U, DA-2

Survey showed "no blanketing with signals as high as 4.7 V/m."

3. Cape Fear Broadcasting Company  
 Fayetteville, North Carolina  
 Present: 940 kHz, 1 kW, 10 kW-LS, U, DA-N  
 Proposed: 940 kHz, 1 kW, 50 kW-LS, U, DA-2

Survey in field intensities of 0.88 V/m to 4.4 V/m indicate no blanketing problems.

4. O.K. Broadcasting Company  
Fairfax, Virginia  
Present: 1310 kHz, 0.5 kW, 1 kW-LS, U, DA-N  
Proposed: 1310 kHz, 0.5 kW, 5 kW-LS, U, DA-2

Survey showed "no blanketing with signals as high as 4.3 V/m."

Furthermore, the devices to be protected from blanketing interference are expected to be located indoors where building attenuation at AM frequencies is another significant factor. The FCC's anticipated radio frequency radiation (RFR) standards recognize the reduction in coupled energy at AM frequencies due to the long wavelengths of the band. It is believed the FCC can increase the AM blanketing level up to 3 V/m (130 dBu) with no deleterious effects to the public.

The FCC proposes to define the extent of the AM blanketing area by a mathematical vector summation of the field radiated by each antenna. The AFCCE has no opposition to this proposal.

As the FCC's NPRM points out, the proliferation of FM stations has resulted in the majority of blanketing complaints. The current rules, adopted in 1985, specify the FM blanketing signal level as 115 dBu (562 mV/m). The distance to the contour is calculated using an inverse distance field formula, disregarding the antenna's height and vertical plane radiation pattern. This is the region within which an FM station is responsible for resolving blanketing complaints. While this assumption may be acceptable for FM stations with low antenna heights and/or low gain antennas, it is believed to be unduly burdensome on those with higher heights.

The FCC's adoption of radiofrequency radiation (RFR) standards, subsequent to implementation of the FM blanketing rules, has made the control of the vertical plane radiation pattern and downward radiation much more of a factor in antenna design and selection. The antenna vertical pattern is a key element in stations demonstrating compliance with the FCC's RFR guidelines. With the anticipated revised RFR regulations, reliance on the antenna's vertical pattern is expected to be even more important. The FCC is encouraged to accept showings made at the application stage for a reduced FM blanketing area based on consideration of the antenna's vertical pattern and height in calculating the extent of the 115 dBu contour.

The FCC is proposing to adopt the current FM blanketing standards for TV broadcast stations. A survey of several of AFCCE's most senior members indicates a recognition of AM and FM blanketing, but a virtual absence of TV blanketing problems. This includes members familiar with the large multi-station TV installations around the country. The FCC appears to have improperly assumed a similarity between FM blanketing and TV blanketing.

Using the FCC's proposed formula, the extent of the blanketing area for maximum powered TV stations would be as follows :

Low VHF (Ch.2-6)	=	3.94 km ( 2.45 mi)
High VHF (Ch.7-13)	=	7.00 km ( 4.35 mi)
UHF (Ch.14-69)	=	27.86 km (17.31 mi)

These distances, especially that for UHF, are much too conservative for blanketing interference considerations. Blanketing interference is widely recognized as being in the "immediate vicinity" of a broadcast station. This means within a couple of miles. It is believed the FCC's proposal will place an unreasonable burden on TV broadcasters to resolve claims of interference within these large areas.

TV power levels are based on peak of sync, another factor different from FM stations.<sup>2</sup> TV antennas are considered to be better built and more predictable than FM antennas. Higher gain, multi-bay antennas are more common for TV use, with much lower downward radiation in the region where blanketing interference might be expected. Most TV antennas are horizontally polarized only, whereas, most FM antennas include a vertically polarized component. The TV spectrum allocated for TV broadcast is over twenty times that allocated to FM.

Low VHF TV (Ch.2-6)	=	54-88 MHz
FM (Ch.200-300)	=	88-108 MHz

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<sup>2</sup> The average visual power under typical picture modulation conditions is less than 40% of peak power. Assuming a 10% aural power level, it can be assumed that the average power (total) is at least 3dB lower than peak.

High VHF TV (Ch.7-13) = 174-216 MHz

UHF TV (Ch.14-69) = 470-806 MHz

Electronic devices tend to be more susceptible to interference at lower frequencies (such as FM and low VHF TV), than at higher frequencies (such as UHF). These are all factors why TV blanketing has not been a significant issue in the past even though significantly higher power levels are employed .

Based on the experience of its members, the AFCCE believes that there is no clear basis for the establishment of blanketing interference Rules for television broadcasting. Should the record in this Docket clearly establish the need for such Rules, the AFCCE suggests the adoption of the following values for the blanketing contours of TV broadcast stations.

Low VHF (Ch.2-6)	120 dBu (1 V/m)
High VHF (Ch.7-13)	120 dBu (1 V/m)
UHF (Ch.14-69)	130 dBu (3 V/m)

As with the calculations made to demonstrate compliance with the RFR standards, calculations of the blanketing contour based on the antenna's vertical pattern and height should be an acceptable procedure. Further, the use of the inverse distance formula (free space loss), for distances greater than approximately 5 km, can result in a substantial over estimation of the distance to the blanketing contour. AFCCE suggests that the FCC's propagation curves be used to predict the distance to the blanketing contour where the blanketing contour would otherwise be predicted to extend beyond 5 km.

The AFCCE applauds the FCC in clarifying and identifying devices requiring protection and not requiring protection. The bulk of the blanketing problems are to devices poorly shielded, poorly grounded, and with poor frontend selectivity. It is not reasonable to expect broadcasters to protect these devices. Consumer electronic devices should be required to meet immunity standards to minimize potential blanketing problems.

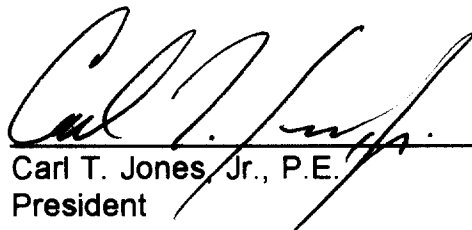
The AFCCE supports the FCC's list of protected and non-protected devices. It encourages further clarification in this proceeding on a couple of matters. The devices covered should include all stationary or fixed radio receivers regardless of the band of operation. Similarly, mobile receivers, regardless of band of operation, should not be covered. Personal pagers and other portable radios which are used in a mobile (i.e., non-fixed) mode should be included in the list of devices not covered. It should be clear that protection afforded to devices such as satellite TV receivers and VCR's, is for interference received through the antenna terminals and not for problems arising from poor shielding

or cabling. The broadcaster should only be responsible for interference to the RF portion of the devices.

With the exceptions noted herein, the AFCCE supports the FCC's efforts in establishing blanketing interference standards.

Respectfully submitted,

Association of Federal Communications  
Consulting Engineers



Carl T. Jones, Jr., P.E.  
President

June 25, 1996